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2/2

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/019,931   | 05/10/2002  | Luc Varin            | 14187.00001         | 8743             |
| 27160  | 7590        | 12/29/2005           | EXAMINER            |                  |
| KATTEN MUCHIN ROSENMAN LLP<br>525 WEST MONROE STREET<br>CHICAGO, IL 60661-3693 |             |                      |                     | BAUM, STUART F   |
|  |             | ART UNIT             |                     | PAPER NUMBER     |
|  |             |                      |                     | 1638             |

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/019,931             | VARIN ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Stuart F. Baum         | 1638                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 12 October 2005.
- 2a) This action is **FINAL**.                                   2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1,2,6-9,43,47 and 52-58 is/are pending in the application.
- 4a) Of the above claim(s) 52-54 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,6-9,43,47 and 55-58 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10 May 2002 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 5/10/02.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

1. The amendment filed 10/12/2005 has been entered.  
Claims 1-2, 6-9, 43, 47, and 52-58 are pending.  
Claims 3-5, 10-42, 44-46 and 48-51 have been canceled.  
Claims 52-58 have been newly added.
2. Newly submitted claims 52-54 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claim 52 is drawn to applying a compound to a plant that induces flowering which comprises divergent method steps not required for the originally elected group. Claim 53 is drawn to applying an inhibitor of a sulfotransferase to a plant which comprises divergent method steps not required by the originally elected group. Claim 54 is drawn to increasing the endogenous level of an hydroxylase hydroxylating jasmonic acid and/or methyljasmonic acid which reads on transforming a plant with a nucleic acid encoding said enzyme. Claim 54 comprises divergent method steps not required for the originally elected group.  
Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 52-54 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.
3. Claims 1-2, 6-9, 43, 47, and 55-58 are examined in the present office action.
4. Rejections and objections not set forth below are withdrawn.

5. The text of those sections of Title 35, U.S. Code not included in this office action can be found in a prior office action.

6. This application contains claims 52-54 drawn to an invention nonelected by original presentation filed 10/12/2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Claim Objection***

7. Claim 6, line 1, is objected to for misspelling “sulfotransferase”.

***Indefiniteness***

8. Claim 56 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 56 is indefinite in the recitation “AtST2a”. The sole designation of a nucleic acid sequence that encodes a polypeptide by “AtST2a” is arbitrary and creates ambiguity in the claims. For example, the amino acid sequence in this application could be designated by some other arbitrary means, or the assignment of said name could be arbitrarily changed to designate a different nucleic acid sequence encoding a polypeptide. If either event occurs, one’s ability to determine the metes and bounds of the claim would be impaired. See *In re Hammack*, 427 F.2d 1378, 1382; 166 USPQ 204, 208 (CCPA 1970). Amendment of the claim to refer to a specific SEQ ID NO would obviate this rejection.

***New Matter***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 6, 43, 47, and 55-58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims have been amended to recite “the sulfotransferase has an amino acid sequence having at least 70% similarity with SEQ ID NO:3” or “nucleic acid sequence coding for an amino acid sequence having at least 70% similarity with SEQ ID NO:3”. Applicants fail to point to support for the phrase in the instant specification. Upon a cursory search of the specification, support could not be found. Applicants are required to point to support for “the sulfotransferase has an amino acid sequence having at least 70% similarity with SEQ ID NO:3” or “nucleic acid sequence coding for an amino acid sequence having at least 70% similarity with SEQ ID NO:3” or to amend the claims to delete the NEW MATTER.

***Written Description***

10. Claims 6-9, 43, and 47 remain rejected and new claims 55-58 and newly amended claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not

described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is maintained for the reasons of record set forth in the Official action mailed 10/6/2004. Applicant's arguments filed 10/12/2005 have been fully considered but they are not persuasive.

Re: claim 7, drawn to "sulfotransferase encoded by "a" gene of SEQ ID NO:1" reads on any sulfotransferase encoded by a subsequence of the gene whose sequence is set forth in SEQ ID NO:1, which includes mutants and allelic variants that exhibit a different activity compared to the activity of the sulfotransferase encoded by the gene comprising SEQ ID NO:1. Applicants have not disclosed said mutants and allelic variants. The Office contends that replacement of "a gene" with --the gene-- will obviate this issue.

Re: claim 56, drawn to AtST2a. Applicants have not fulfilled the written description requirement for the genus of AtST2a genes.

Re: claims 6, 43, and 55 drawn to amino acid sequence with at least 70% similarity with SEQ ID NO:3. Applicants have not fulfilled the written description requirement for the genus of sequences encoding proteins exhibiting at least 70% similarity with SEQ ID NO:3 and that exhibit the same activity as the protein encoded by SEQ ID NO:1. Applicants have not disclosed any sequence that is 70% similar to SEQ ID NO:3 and has the same activity as the protein of SEQ ID NO:3.

Applicants contend that the sequence described in the present application contains the motifs that are well known to be present in all soluble sulfotransferases that have been characterized so far (page 7, 3<sup>rd</sup> paragraph). Applicants disclose two amino acid domains that

are highly conserved, i.e., YPKSGTTW and RKXXG DWKNXFT. Applicants contend that histidine 118 is absolutely required (page 7, last sentence). Applicants contend that a person skilled in the art can find these motifs and “assess the sulfotransferase function of an unknown protein having these motifs” (page 8, 1<sup>st</sup> paragraph). Applicants contend that knowing these domains allows one to easily identify proteins having sulfotransferase activity using a protein database (page 8, 3<sup>rd</sup> paragraph). Applicants contend that new sulfotransferase coding sequences can be found using degenerate primers in a PCR reaction, whose product can then be used as a probe to screen libraries for a full length sequence (page 8, 4<sup>th</sup> paragraph).

The Office contends that Applicants have not fulfilled the written description requirement for claims drawn to nucleic acids encoding an amino acid sequence having 70% similarity with SEQ ID NO:3, or claims drawn to “sulfotransferase encoded by a gene of SEQ ID NO:1” as discussed above. Applicants have not disclosed a representative number of sequences encoding any sulfotransferase and applicants have not disclosed all the essential elements of a sulfotransferase. Applicants have only disclosed in the remarks that sulfotransferase have the two domains, i.e., YPKSGTTW and RKXXG DWKNXFT and that histidine 118 is absolutely required. The Office invites Applicants to submit references that disclose that sulfotransferases other than SEQ ID NO:3 were known in the art to one of skill in the art at the time the application was filed, for the Office to consider. These references should also be made of record by including them in an Information Disclosure Statement.

*Scope of Enablement*

11. Claims 1-2, 6-9, 43, and 47 remain rejected and new claims 55-58 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of increasing the time to flowering in *Arabidopsis* plants comprising transforming said plants with the *Arabidopsis* AtST2a genomic sequence of SEQ ID NO:1, operably linked to a promoter in antisense orientation, wherein the levels of 12- or 11-hydroxyjasmonic acid are increased relative to non-transgenic plants, does not reasonably provide enablement for a method for modulating flowering in a plant comprising modifying the level of any compound listed in claims 1 or 2 comprising modulating or reducing the expression of a sulfotransferase encoded by any gene of SEQ ID NO:1 or wherein the sulfotransferase has an amino acid sequence having at least 70% similarity with SEQ ID NO:3, or a method for producing a transgenic plant capable of flowering early comprising a nucleotide sequence that is antisense to a nucleic acid sequence coding for an amino acid sequence having at least 70% similarity with SEQ ID NO:3, or wherein said method further comprises the step of inhibiting in said plant the expression of at least one gene selected from the group consisting of AtST2a and its functional homologues. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. This rejection is maintained for the reasons of record set forth in the Official action mailed 10/6/2004. Applicant's arguments filed 10/12/2005 have been fully considered but they are not persuasive.

Applicants contend that "despite the fact that it is difficult to predict exactly the outcome of plant transformation experiments due to the random insertion of the T-DNA in transgenic plants, the characterization of a number of independent lines" allows one "to find the one(s)

expressing the transgene at an adequate level. This is true both for overexpression in sense and underexpression via antisense or RNA interference. Someone skilled in the art, would easily bypass this apparent pitfall of transgenic plant production" (page 8, 5<sup>th</sup> paragraph).

The Office contends that Applicants elected Group IV, which is drawn in part to inhibiting gene expression which includes antisense and co-suppression. The state-of-the-art teaches that transforming plants with nucleic acids encoding a protein involved in jasmonic acid biochemistry produces unpredictable results, and transforming plants with heterologous nucleic acids in sense or antisense orientation for the purpose of down regulating a gene produce unpredictable results, as stated in the office action mailed 10/6/2004. Therefore, given the breadth of the claims, i.e., "sulfotransferase encoded by any gene of SEQ ID NO:1", "the sulfotransferase has an amino acid sequence having at least 70% similarity with SEQ ID NO:3" or "nucleic acid sequence coding for an amino acid sequence having at least 70% similarity with SEQ ID NO:3" or claims drawn to AtST2a; the lack of guidance and examples encompassing the claim breadth; the unpredictability in the art; and the state-of-the-art as discussed above, undue trial and error experimentation would be required by one of skill in the art to practice the claimed invention.

12. No claims are allowed.
13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart F. Baum whose telephone number is 571-272-0792. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Stuart F. Baum Ph.D.  
Patent Examiner  
Art Unit 1638  
December 13, 2005

DAVID T. FOX  
PRIMARY EXAMINER  
GROUP 180

1638

